

A REVISION OF THE TERMITES OF THE GENUS *AMITERMES* FROM THE ETHIOPIAN REGION (ISOPTERA, TERMITIDAE, AMITERMITINAE)

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THE subfamily Amitermitinae is represented in the Ethiopian zoogeographical region by comparatively few genera, of which the most important are the tropicopolitan *Amitermes* and *Microcerotermes*. The former is dealt with here, the revision being based mainly on the collections of the Colonial Termite Research Unit at the British Museum (Nat. Hist.).

The generitype of *Amitermes* Silvestri is the South American *A. amifer*, but the genus is represented in all the main zoogeographical regions including Australia and the Palaearctic. The genus derives its name from the characteristically hooked soldier mandibles of most of its members.

The revised list for the Ethiopian region consists of thirteen species, the synonyms of each being included in plain type :

Amitermes acinacifer sp. nov.

Amitermes braunsi Fuller (1922)

Amitermes evuncifer Silvestri (1912)

Amitermes hastatus (Haviland) (1898)

Amitermes atlanticus Fuller (1922)

Amitermes capicola Silvestri (1914)

Amitermes gunni Fuller (1922)

Amitermes kellyi Fuller (1922)

Amitermes kenhardti Fuller (1922)

Amitermes libertatis Fuller (1922)

Amitermes londonensis Fuller (1922)

Amitermes murraysburgi Fuller (1922)

Amitermes runconifer Silvestri (1908)

Amitermes schoombiensis Fuller (1922)

Amitermes zuurbergi Fuller (1922)

Amitermes importunus sp. nov.

Amitermes lönnbergianus (Sjöstedt) (1911)

Amitermes lacertosus Ghidini (1941)

Amitermes messinae Fuller (1922)

Amitermes harleyi Harris (1957)

- Amitermes sciangallorum* Ghidini (1941)
Amitermes somaliensis Sjöstedt (1927)
Amitermes spinifer Silvestri (1914)
Amitermes stephensoni Harris (1957)
Amitermes truncatidens sp. nov.
Amitermes unidentatus (Wasmann) (1897)
 Amitermes elongatus Silvestri (1914)
 Amitermes limpopoensis Fuller (1922)
 Amitermes macrocephalus Ghidini (1941)
 Amitermes meruensis (Sjöstedt) (1911)

Three other species are removed from the list but not synonymized with others, namely :

“*Amitermes bechuana*” Fuller (1922). This is only known from the alate caste. The cotype has been examined, and it does not belong to the genus *Amitermes*, but is a member of the subfamily Termitinae.

“*Amitermes paucinervius*” (Silvestri) Fuller (1922). Silvestri’s illustration indicates that this species does not belong to *Amitermes*, but is probably a member of the Termitinae.

“*Amitermes seminotus*” (Silvestri) Fuller (1922). The imago-worker mandibles illustrated by Silvestri are not those of *Amitermes*, but more closely resemble those of some members of the Termitinae, such as *Promirotermes*.

Sjöstedt’s single record of *Amitermes hastatus* (Hav.) from Kilimandjaro, Tanganyika is included in *A. messinae* Fuller, on the grounds that subsequent extensive collecting in the area has produced only this species, and *A. hastatus* is otherwise unknown north of the River Zambezi.

The proposals now made for the reduction of a large number of species to synonyms are based on a study of the wide range of variation encountered in this genus. Not only has variation in structure to be considered but also differences in the individual variability of different species. It has frequently been found that characters which can be used to separate two particular species may be completely unreliable in the rest of the genus. Conversely, more general use has been made of some characters previously only used in a limited way, such as the presence of spines on the anterior coxae of the soldier caste first mentioned by Silvestri in *A. spinifer* (1914).

An account has been given by Hill (1942) of the wide range of variation in the soldier caste of an Australian species of *Amitermes*, and certain Ethiopian species have been found to be scarcely less variable. The head capsule shows a wide range of size and shape in plan view, but the profile is often more constant in outline. The mandibles commonly vary in size, thickness, in some cases in curvature, and in the degree of development of the median tooth. The variation in this tooth reaches the extreme of reversal of direction in one species, and in others, though fairly constant in position, varies from prominent to almost obsolete.

The shape and size of the clypeus, labrum, and gula, the degree of emargination of the pronotum, and the number and proportions of the antennal segments are not reliable specific characters for the soldier caste of *Amitermes*.

In the alate caste overall size, and the relative size and proportions of the eyes, ocelli, and fontanelle vary slightly. The fontanelle is depressed in some species, and in one this varies in degree from a flat surface to a deep, broad fossa. The degree and shape of the emargination of the posterior lobes of the meso- and metanota are not usable as specific characters. The variation in wing venation is such that the four wings of one specimen are often widely different.

KEY TO THE ALATES

Alates of the genus *Amitermes*, in Africa, are distinguishable by the following characteristics : labrum broader than long ; mandibles with apical tooth slightly shorter to slightly longer than first marginal ; eyes generally small, greatest diameter being shorter up to slightly longer than postclypeus ; fontanelle broad to elongate oval, usually centred on or behind a line joining posterior margins of eyes, depressed to a varying extent ; posterior margins of meso- and metanota broadly emarginate, forming obtuse angles. Small insects, head width 0.86–1.25 mm., wing length 8.0–13.0 mm.

1. Anterior margin of pronotum produced into a short emarginate median lobe (Text-fig. 2E) *A. messinae* Fuller
- Anterior margin straight or very slightly sinuate, entire or slightly emarginate 2
2. Posterior margin of head approximately semicircular, evenly rounded 3
- Posterior margin of head not approximately semicircular, slightly sinuate immediately behind eyes *A. stephensoni* Harris
3. Fontanelle area slightly to much larger than ocellus 4
- Fontanelle area not larger usually smaller than ocellus 5
4. Smaller species, width of head across eyes 1.00 mm.; diameter of eye 0.24 mm.; hind tibia up to 1.00 mm. Fontanelle distinctly behind line joining posterior margins of eyes. Ocellus longer than half greatest diameter of eye *A. braunsi* Fuller
- Larger, head width over 1.04 mm. (mean 1.12); diameter of eye over 0.26 mm. (mean 0.30); hind tibia over 1.04 mm. (mean 1.20). Fontanelle on a line joining posterior margins of eyes. Ocellus one-third to two-fifths diameter of eye *A. unidentatus* (Wasmann)
5. Anterior coxae with one to five stout spine-like setae in line or group near middle of front surface. (Smaller, head width 0.86–0.93 mm.; eye 0.21–0.23; hind tibia 0.82–0.93) 6
- Anterior coxae without spine-like setae, ordinary setae may be present or very sparse. (Larger, head width over 0.95 mm.; eye 0.23–0.31; hind tibia 0.93–1.33) 7
6. Frons with two diverging grooves anterior to fontanelle *A. spinifer* (Silvestri)
- Frons flat or only faintly indented anterior to fontanelle *A. somaliensis* Sjöstedt
7. Left mandible with third marginal tooth protruding beyond cutting edge connecting it to first marginal 8
- Third marginal does not project beyond cutting edge connecting it to first marginal *A. hastatus* (Haviland)
8. Larger, head width 1.18–1.25 mm.; hind tibia length 1.29–1.36 mm. *A. lönnbergianus* (Sjöstedt)
- Smaller, head width 1.00–1.11 mm.; hind tibia length 0.97–1.14 mm. 9
9. Greatest diameter of eye 0.24 mm. Postclypeus strongly inflated, length more than half width *A. braunsi* Fuller
- Greatest diameter of eye over 0.28 mm. Postclypeus moderately inflated, length not more than half width, usually less 10
10. Frons with two diverging grooves anterior to fontanelle, and slightly rugose; oval part of fontanelle less than twice as long as broad; postclypeus markedly paler in colour than rest of head *A. truncatidens* sp. nov.
- Frons smooth; oval part of fontanelle at least twice as long as broad; postclypeus scarcely paler in colour than rest of head *A. evuncifer* Silvestri

KEY TO THE SOLDIERS

- | | | |
|-----|--|------------------------------------|
| 1. | Spines present on anterior coxae (Text-fig. 6M) | 2 |
| - | Spines absent from anterior coxae (Text-fig. 6N). (Thin colourless setae sometimes present in same position) | 8 |
| 2. | Tooth of mandible directed backwards in line of curve of inner margin | 3 |
| - | Tooth more or less erect, projecting strongly from inner margin | 4 |
| 3. | Larger, head length 1.02-1.55 mm.; width 0.78-1.18; strong inward curve of outer margin of mandible commences at or proximal to median tooth | <i>A. messinae</i> Fuller |
| - | Smaller, head length 0.89-1.18 mm.; width 0.74-0.91; strong inward curve of outer margin of mandible commences distal to median tooth | <i>A. spinifer</i> Silvestri |
| 4. | Mandibles elongate, almost straight, slightly elbowed with inflexed tips; inner margin strongly sinuate from tooth to apex (Text-fig. 6A). | <i>A. acinacifer</i> sp. nov. |
| - | Mandibles hooklike; inner margin a regular curve from tooth to apex | 5 |
| 5. | Mandibles slender, minimum width behind tooth about one-sixth length | 6 |
| - | Mandibles stout, minimum width behind tooth one quarter or more of length (Text-fig. 6H) | <i>A. somaliensis</i> Sjöstedt |
| 6. | Larger, head width over 0.95 mm.; head depth over 0.80 mm. | <i>A. stephensoni</i> Harris |
| - | Smaller, head width over 0.91 mm.; head depth under 0.75 mm. | 7 |
| 7. | Mandibles strongly hooked, tooth at mid-point between base and apex, usually obliquely truncated or rounded (Text-fig. 6I) | <i>A. spinifer</i> Silvestri |
| - | Mandibles curved, not hooked, tooth distinctly behind mid-point between base of tooth and apex, usually triangular (Text-fig. 6G) | <i>A. sciangallorum</i> Ghidini |
| 8. | Tooth on mandible directed backwards in line of curve of inner margin (Text-fig. 6C) | <i>A. hastatus</i> (Haviland) |
| - | Tooth on mandible more or less erect, projecting from inner margin | 9 |
| 9. | Hind tibia 1.18-1.39 mm. long | <i>A. lönnbergianus</i> (Sjöstedt) |
| - | Hind tibia up to 1.14 mm. long | 10 |
| 10. | Tooth of mandible very prominent, truncated, separated from inner margin in front by a sharp change of curvature (Text-fig. 6, B, D, K) | 11 |
| - | Tooth of mandible less prominent, separated from inner margin in front by a gradual change of curvature, seldom truncated (Text-fig. 6L) | <i>A. unidentatus</i> (Wasmann) |
| 11. | Anterior lobe of pronotum shorter than posterior | <i>A. importunus</i> sp. nov. |
| - | Anterior lobe of pronotum as long as or longer than posterior | 12 |
| 12. | Vertex generally somewhat inflated behind fontanelle with change of curvature between this fold and dorsal surface of head (Text-fig. 5K). Mandibular tooth more or less transversely truncated (Text-fig. 6K) | <i>A. truncatidens</i> sp. nov. |
| - | Vertex not inflated behind fontanelle, dorsal surface of head evenly curved from fontanelle to occiput (Text-fig. 5B). Mandibular tooth obliquely truncated or rounded (Text-fig. 6B) | <i>A. evuncifer</i> Silvestri |
- (Note. Exceptions to couplet 12 will be found, these two species being very closely related and difficult to separate.)

A Note on Distribution

The most noteworthy feature which has become apparent during revision of this very successful genus is the comparatively small number of species by which it is represented in the Ethiopian region. The list can be roughly subdivided into even smaller groups of species occurring in each of the main vegetation zones of the region, and in these zones different species occupy comparable ecological niches. As might be expected there is some degree of overlapping at the limits of distribution, but in each zone the fauna is limited to a few species of differing habits.

The distribution of the *Amitermes* of the Ethiopian region is shown on the accompanying map (Text-fig. 1).

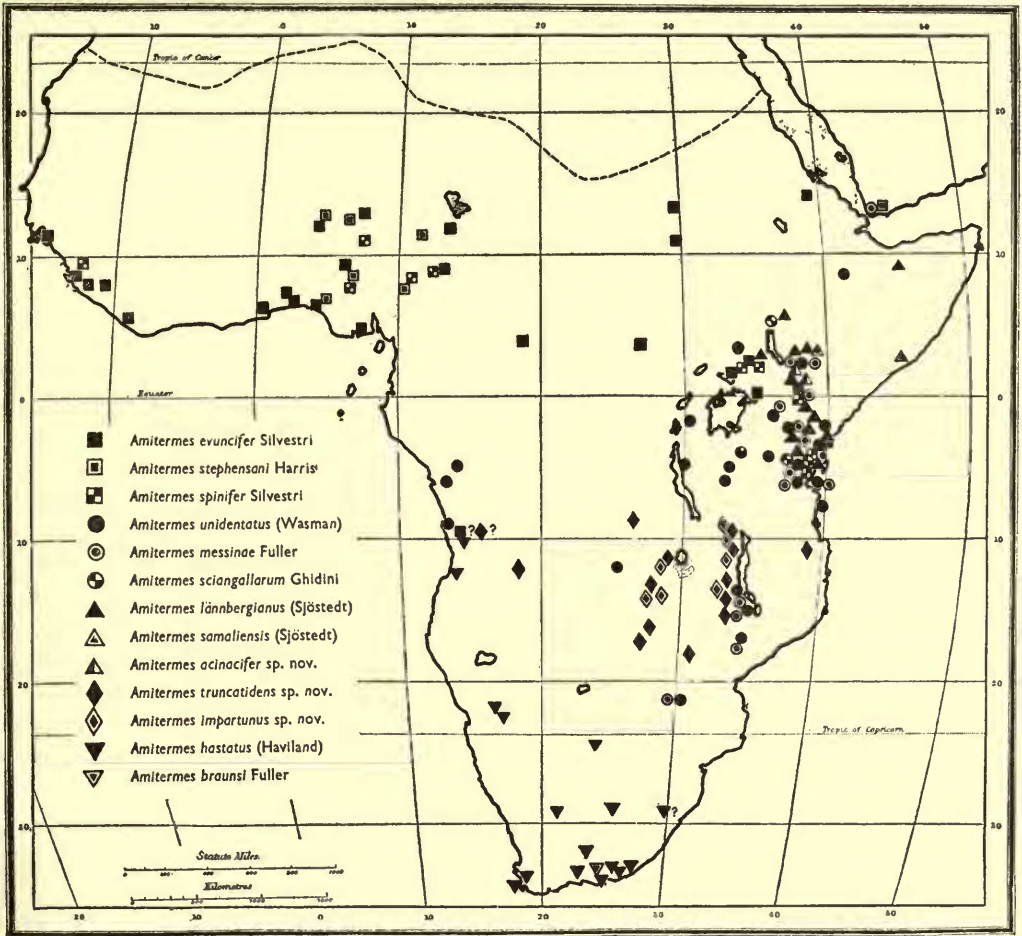


FIG. 1. Map of the distribution of the genus *Amitermes* in the Ethiopian zoogeographical region.

***AMITERMES* Silvestri**

***Amitermes acinacifer* sp. nov.**

(Text-figs. 4A ; 5A ; 6A)

IMAGO. Unknown.

SOLDIER. Head capsule yellow to yellow-brown ; mandibles pale brown to chestnut brown ; antennae and legs pale yellow, rest of body yellowish-white except where gut contents show through abdomen.

Head in plan view, slightly longer than broad, sides curved, posterior margin regularly rounded. In profile, continuously curved from fontanelle to occiput, curve

shallower in front. Mandibles elongate, almost straight, slightly elbowed with inflexed tips; tooth within basal third, prominent, erect, directed slightly forwards; inner margin strongly sinuate from base of tooth to apex. Antennae, 13-14 segmented, II, IV and V subequal, III half as long as these, or II and V subequal, III and IV subequal and half as long as these. Head capsule with sparsely scattered setae.

Pronotum with regularly curved anterior border, not emarginate. Anterior coxae with 3-4 short stout spines grouped approximately in middle of front surface. Rest of legs with numerous spines and long setae.

	Range in mm.	Mean
Length of head capsule	0.93-0.97	0.96
Greatest width of head	0.76-0.82	0.78
Width of head at base of mandibles	0.61-0.63	0.61
Depth of head capsule	0.61-0.64	0.63
Length of pronotum	0.32	
Width of pronotum	0.47-0.49	0.47
Length of hind tibia	0.70-0.78	0.73

WORKER. Head yellow, antennae and rest of body yellowish-white. Third marginal tooth of left mandible does not usually protrude beyond cutting edge connecting it with first marginal.

Described from numerous soldiers and workers from localities in the Northern Frontier Province of Kenya.

This species differs completely in the form of the soldier mandible from any other known African species, and appears in this character to resemble the Australian genus *Drepanotermes*.

TYPE LOCALITY. KENYA; Marsabit district, 27 miles from Marsabit township on the Isiolo Road (Altitude 2,000 ft. approx.), 5.iii.53 (W. A. Sands, Coll., No. 442).

Holotype soldier and paratypes in British Museum (Natural History).

OTHER RECORDS. KENYA: Northern Frontier Province, 35 miles north of Uaso Nyero, and at Marsabit, on Mega and Moyale Roads, 1953 (W. A. Sands).

All the records of this species are from dead wood; the nest proper has not been discovered.

Amitermes braunsi Fuller

(Text-figs. 2A; 3A; 4B)

Hamitermes braunsi Fuller, 1922, *S. Afr. J. nat. Hist.* 3 (2): 70-131, South Africa: Willowmore.

IMAGO. *Female*: Colour uncertain due to fading in old specimen.

Posterior margin of head almost semicircular; fontanelle as large as or larger than ocelli, with narrow pale extension anteriorly, partially depressed or nearly flat, centred distinctly behind a line joining posterior margins of eyes; eyes about as long as postclypeus; ocelli large, broad, oval, separated from eyes by slightly less than own width; postclypeus slightly longer than half breadth, inflated, anterior

margin straight, posterior margin evenly convex; antennae 15 segmented, III shorter than IV, IV and V subequal.

Pronotum narrower than head across eyes, anterior margin straight, sides broadly rounded, converging to sinuate posterior.

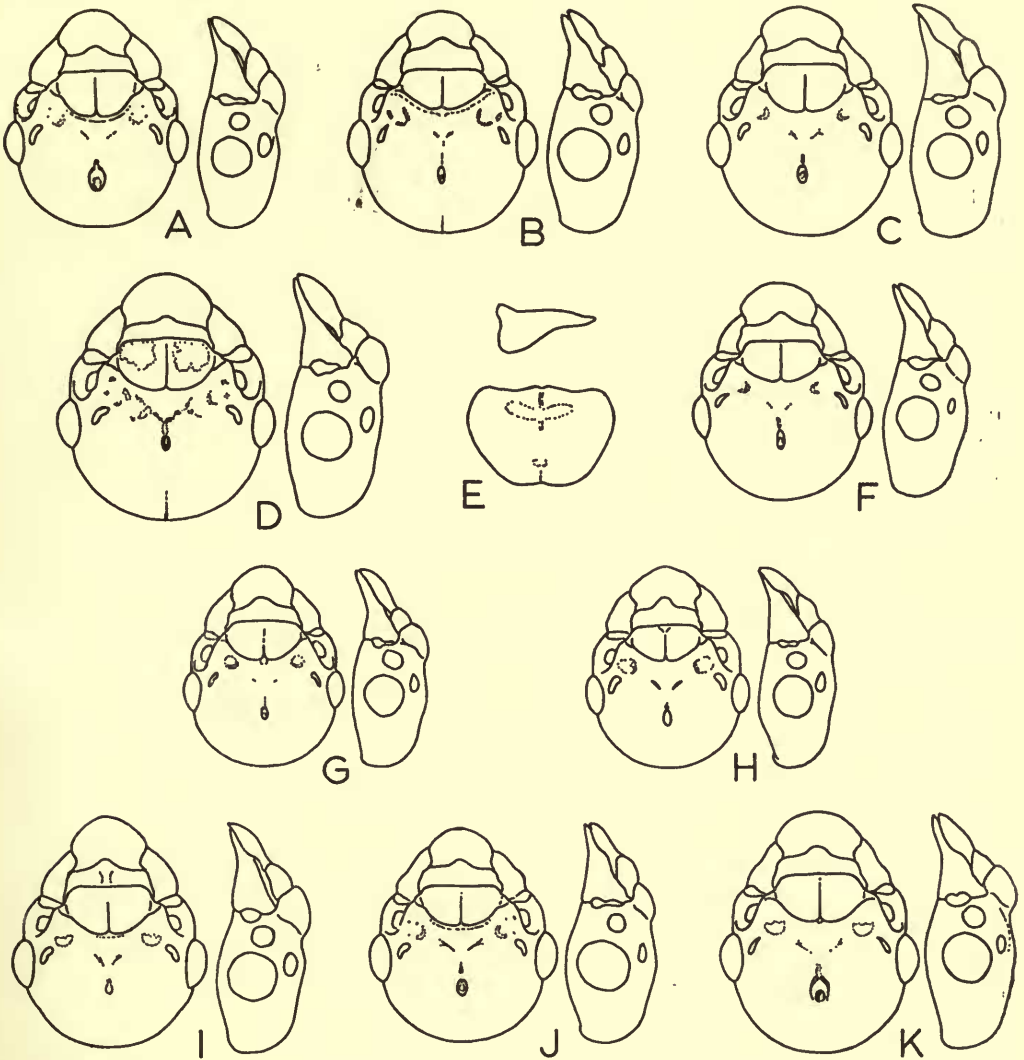


FIG. 2. A-D and F-K, plan and side views of heads of imagos; E, side and plan view of pronotum of imago of *Amitermes messinae* Fuller.

- A. *Amitermes braunsi* Fuller; B. *Amitermes evuncifer* Silvestri; C. *Amitermes hastatus* (Haviland); D. *Amitermes lönnbergianus* (Sjöstedt); F. *Amitermes messinae* Fuller; G. *Amitermes somaliensis* Sjöstedt; H. *Amitermes spinifer* Silvestri; I. *Amitermes stephensoni* Harris; J. *Amitermes truncatidens* sp. nov.; K. *Amitermes unidentatus* (Wasmann).

Male, as female, except for slightly larger fontanelle.

	mm.
Head width across eyes	1.00
Greatest diameter of eye	0.24
Ocellus	0.09 × 0.13
Ocellus to eye	0.07–0.08
Width of pronotum	0.78
Length of pronotum	0.47
Length of hind tibia	0.97–1.00
Length of fore wing	9.6

WORKER. Left mandible with third marginal tooth protruding beyond cutting edge connecting it to first marginal; distance between first and third marginals greater than that between apical and first marginal.

Anterior coxae without spines.

Described from cotypes from type colony. The unique soldier is missing from the type series, and cannot be included in this revision.

It is possible that *A. importunus* sp. nov. described in succeeding pages from soldiers and workers only may be the same species as *A. braunsi* Fuller. In the absence of the soldier type of the latter this cannot be confirmed, particularly since the worker left mandible of *A. importunus* is different in its proportions from that described above.

Amitermes evuncifer Silvestri

(Text-figs. 2B; 3B; 4C; 5B; 6B)

Termes unidentatus Wasmann, 1897, *Abh. Senckenb. Ges.* **21**: 137–182, Gold Coast record only.

Hamitermes evuncifer Silvestri, 1912, *Ann. Mus. civ. Stor. nat. Genova*, **45**: 211–255, Portuguese Guinea: Bolama, Rio Cassine.

Hamitermes evuncifer var. *heterocera* Silvestri, 1914, *Boll. Lab. zool. Portici*, **9**: 3–146.

Amitermes unidentatus subsp. *evuncifer* Silvestri; Sjöstedt, 1926, *Ent. Tidskr.*, **47**: 238–246 and Sjöstedt, 1926, *K. svenska Vetensk. Akad. Handl.* (3), **3** (1): 1–419.

Amitermes (Amitermes) evuncifer Silvestri; Emerson, 1928, *Bull. Amer. Mus. nat. Hist.* **57**: 401–574.

IMAGO. The following data and measurements must be added to Sjöstedt's description: Fontanelle an elongate oval, often partially or entirely depressed, smaller than ocelli. Third marginal tooth of left mandible protrudes beyond cutting edge connecting it with first marginal; distance between points of apical and first marginal less than distance between first and third marginal.

	Range in mm.	Mean
Width of head across eyes	1.02–1.11	1.06
Eye, greatest diameter	0.28–0.31	0.30
Ocellus	0.06–0.09 × 0.10–0.16	0.08 × 0.12
Ocellus to eye	0.02–0.07	0.05
Width of pronotum	0.86–0.97	0.89
Length of pronotum	0.54–0.61	0.59
Length of hind tibia	1.00–1.14	1.07
Length of fore wing	8.00–10.7	9.5

SOLDIER. Range of variation in size much greater than previously recorded. Spines absent from anterior coxae.

	Range in mm.	Mean
Length of head capsule	1·14-1·66	1·42
Greatest width of head	1·02-1·30	1·17
Width of head at base of mandibles	0·70-0·87	0·80
Depth of head	0·82-1·00	0·96
Length of left mandible	0·61-0·75	0·71
Length of pronotum	0·30-0·40	0·35
Width of pronotum	0·61-0·75	0·63
Length of hind tibia	0·78-1·11	0·99

WORKER. Colour yellowish-white. Larger than preceding three species. Mandible similar to that of imago.

A. evuncifer can only be distinguished from *A. truncatidens* sp. nov. with difficulty, in the alate caste by the smoother frons and in the soldier by the less inflated vertex and the slightly more obliquely truncated mandibular tooth. It is separable from *A. importunus* sp. nov. by the longer anterior lobe of the pronotum and the more evenly rounded head profile.

A. evuncifer var. *heterocera* Silvestri is part of the normal range of variation, and not a distinct variety.

SIERRA LEONE: Freetown, Bo, Kenema, 1958 (W. Wilkinson).

GHANA: Kumasi, 1958 (W. Wilkinson); Aburi, Nkawkaw, 1955 (W. V. Harris).

NIGERIA: Over 150 records from Lagos beach and Bonny in the south to 50 m. from Maiduguri on the Fort Lamy road in the north 1955-58 (W. V. Harris, W. A. Sands and W. Wilkinson).

UGANDA: Bugondo, 1939 (P. R. Stephenson); Singo, Kalagala (Bulemezi), 1949 (W. V. Harris); Moroto (Karamoja), 1952 (W. A. Sands); 25 m. N. of Atura, 1955 (W. Wilkinson).

KENYA: Kisumu, 1952 (W. A. Sands).

SUDAN: Um Kheirein, 1927 (W. P. L. Cameron); Kadugli, 1952 (R. C. H. Sweeney).

ERITREA: Gula, 1953 (W. J. Stower).

This species has most commonly been collected from dead wood of all kinds, but its dark brown carton and earth mounds are also frequently encountered. It has often been recorded from the mounds of other genera of termites, particularly those of *Cubitermes*, *Trinervitermes*, *Odontotermes* and *Macrotermes*.

***Amitermes hastatus* (Haviland)**

(Text-figs. 2C; 3C; 4D; 5C; 6C)

Termes hastatus Haviland, 1898, *J. Linn. Soc. (Zool.)* 26: 358-442, South Africa: Cape Province; Port Elisabeth.

Hamitermes runconifer Silvestri, 1908, *Denkschr. med.-naturw. Ges. Jena*, 13: 71-82.

Hamitermes (*Hamitermes*) *hastatus* (Haviland); Holmgren, 1912, *K. svenska Vetensk. Akad. Handl.* 48 (4): 1-166.

- Hamitermes hastatus* var. *capicola* Silvestri, 1914, *Boll. Lab. zool. Portici*, 9 : 3-146.
Hamitermes atlanticus Fuller, 1922, *S. Afr. J. nat. Hist.* 3 (2) : 70-131.
Hamitermes capicola Silvestri ; Fuller, 1922, *ibid.*
Hamitermes gunni Fuller, 1922, *ibid.*
Hamitermes kellyi Fuller, 1922, *ibid.*
Hamitermes kenhardtii Fuller, 1922, *ibid.*
Hamitermes libertatis Fuller, 1922, *ibid.*
Hamitermes londonensis Fuller, 1922, *ibid.*
Hamitermes murraysburgi Fuller, 1922, *ibid.*
Hamitermes schoombiensis Fuller, 1922, *ibid.*
Hamitermes zuurbergi Fuller, 1922, *ibid.*
Amitermes hastatus (Haviland) ; Sjöstedt, 1926, *K. svenska Vetensk. Akad. Handl.* (3) 3 (1) : 1-419.

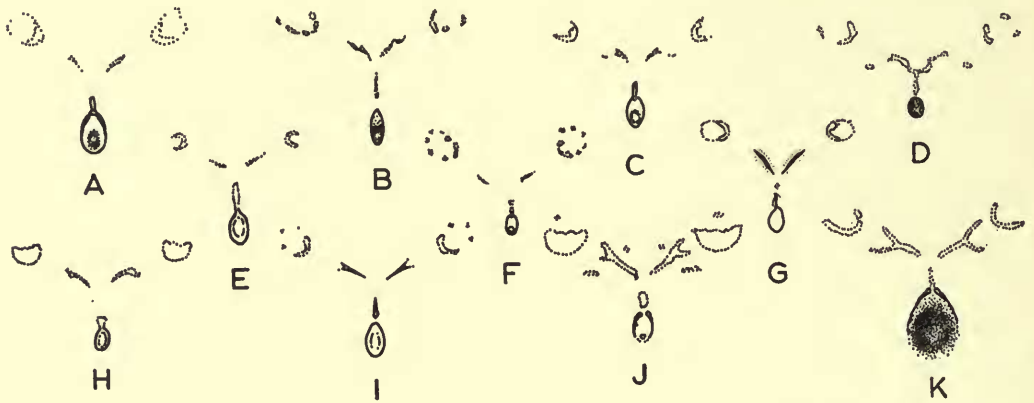


FIG. 3. Fontanelle and adjacent pattern of pale markings on frons of imago.

- A. *Amitermes braunsi* Fuller ; B. *Amitermes evuncifer* Silvestri ; C. *Amitermes hastatus* (Haviland) ; D. *Amitermes lönnbergianus* (Sjöstedt) ; E. *Amitermes messinae* Fuller ; F. *Amitermes somaliensis* Sjöstedt ; G. *Amitermes spinifer* Silvestri ; H. *Amitermes stephensoni* Harris ; I. *Amitermes truncatidens* sp. nov. ; J, K. *Amitermes unidentatus* (Wasmann).

Some additions to Haviland's description are necessary.

IMAGO. Antennae may have 14 or 15 segments. An increased range of size variation is now known.

	Range in mm.	Mean
Head width across eyes	0.95-1.16	1.05
Greatest diameter of eye	0.23-0.29	0.25
Ocellus	0.07-0.10 × 0.10-0.14	0.08 × 0.11
Ocellus to eye	0.03-0.08	0.06
Width of pronotum	0.76-1.04	0.89
Length of pronotum	0.44-0.64	0.54
Length of hind tibia	0.93-1.25	1.07
Length of fore wing	8.00-12.6	10.2

SOLDIER. Head capsule in plan view longer than broad, rounded rectangular to broadly ovoid, narrower at front. In profile, upper surface flat or only slightly

curved between fold above fontanelle and even curvature to occiput. Antennae 13 to 15 segmented, proportions of basal segments variable. Anterior coxae without spines.

	Range in mm.	Mean
Length of head capsule	1.22-1.61 .	1.39
Greatest width of head	1.00-1.29 .	1.10
Width of head at base of mandibles	0.72-0.84 .	0.76
Depth of head	0.82-1.04 .	0.92
Length of left mandible	0.68-0.86 .	0.77
Length of pronotum	0.32-0.40 .	0.33
Width of pronotum	0.57-0.75 .	0.63
Length of hind tibia	0.80-1.14 .	0.94

WORKER. Third marginal tooth of left mandible not usually distinct from cutting edge separating it from first marginal. Anterior coxae without spines. These two characters enable the worker to be distinguished from all other species since the absence of coxal spines is usually associated with a distinct third marginal tooth.

The cotypes of all the species listed in the synonymy except *A. atlanticus* have been examined, and authentic material of the latter has been used. There is a continuous range of variation between the species, which are therefore all reduced to synonyms of *A. hastatus* (Hav.). There is, in fact, less variation in *A. hastatus* so constituted than occurs in the East African species *A. unidentatus* (Wasm.).

The only species likely to be confused with *A. hastatus* is the East and Central African *A. messinae* Fuller, from which it is easily distinguished in the alate by the straight or slightly sinuate anterior margin of the pronotum and in the soldier by the absence of anterior coxal spines. The alates from the more northerly and easterly localities appear to be slightly larger than those from the extreme south, but material is too limited to establish whether or not a cline exists.

SOUTH AFRICA: Port Elisabeth, and Simonstown, 1952 (W. V. Harris). Elgin Forest, 1954 (Balfour-Browne).

The majority of the records in the literature are from temperate or subtropical South Africa, the only exceptions being those of *A. runconifer* Silvestri from SW. Africa and the Kalahari Desert.

Amitermes importunus sp. nov.

(Text-figs. 4E; 5D; 6D)

IMAGO. Unknown.

SOLDIER. Head capsule pale yellow, sometimes a little darker towards front and sides; mandibles pale brown to chestnut brown, yellow-brown at base; antennae pale yellow, rest of body yellowish-white except where gut contents show through abdomen.

Head in plan view, distinctly longer than broad, sides straight to convex, parallel to distinctly convergent anteriorly; posterior margin regularly rounded or with rounded posterior corners distinct. In profile, upper surface of head straight or

weakly sinuate between slight swelling above fontanelle and sharper curve to occiput. Mandibles slender, slightly more than half as long as head, strongly hooked; tooth at or slightly behind middle, prominent, erect, triangular to obliquely truncated, sometimes somewhat rounded; inner margin a regular curve from base of tooth to apex, or slightly straighter near apex. Antennae 14 segmented, II and V subequal and slightly longer than IV, III twice as long as IV. Head setae few in number.

Pronotum with anterior margin entire or weakly emarginate. Legs not markedly pubescent, anterior coxae without spines, though with one or two setae in same position.

	Range in mm.	Mean
Length of head capsule	1.04-1.61	1.42
Greatest width of head	0.90-1.16	1.08
Width of head at base of mandibles	0.75-0.89	0.82
Depth of head	0.77-1.00	0.91
Length of left mandible	0.68-0.86	0.77
Length of pronotum	0.32-0.43	0.39
Width of pronotum	0.61-0.75	0.69
Length of hind tibia	0.89-1.04	0.96

WORKER. Colour yellowish-white. Third marginal tooth of left mandible usually protrudes slightly beyond cutting edge connecting it with first marginal. Distance between points of apical and first marginal equal to, or greater than, distance between first and third marginals.

Described from numerous specimens from localities in Nyasaland and Northern Rhodesia.

Though somewhat similar to *A. evuncifer* and *A. truncatidens*, it can be distinguished by the straighter profile of the upper surface of the head, and in the worker by the different proportions of the teeth of the left mandible.

TYPE LOCALITY. NYASALAND: Central Province, 33 miles from Kasungu on the Lilongwe Rd., 18.ix.53 (W. A. Sands and W. Wilkinson, Coll. No. N. 470).

Holotype soldier and paratypes in British Museum (Natural History).

OTHER RECORDS

NYASALAND: Various localities from Lilongwe northwards, all in *Brachystegia* woodland, 1953 (W. A. Sands and W. Wilkinson).

NORTHERN RHODESIA: Abercorn, 1948 (P. E. Glover); near Tunduma, 1953 (W. A. Sands and W. Wilkinson); Ndola, Kafue River flood plain, Lake Bangweulu, 1957 (W. G. H. Coaton).

All the records are from the mounds of other genera, most commonly those of *Cubitermes*, but also from those of *Odontotermes* and *Macrotermes*. This entirely commensal habit distinguishes it from *A. truncatidens*, which occurs in the same localities, but is usually found in dead wood and in nests of its own construction.

A. importunus appears to occupy a similar ecological niche in the savannah woodland south of the Congo Rain Forest block to that of *A. stephensoni* in the essentially similar Guinean zone to the north.

Amitermes lonnbergianus (Sjöstedt)

(Text-figs. 2D; 3D; 4F; 5E; 6E)

Eutermes lonnbergianus Sjöstedt, 1911, *Ark. Zool.* 7 (18) : 1-3 Kenya : somewhat north of the Guaso Nyero.*Amitermes lonnbergianus* (Sjöstedt) ; Sjöstedt, 1926, *K. svenska Vetensk. Akad. Handl.* (3) 3 (1) ; 1-419.*Amitermes lacertosus* Ghidini, 1951, *Bol. Soc. ent. ital.* 73 : 30-34.

IMAGO. Previously undescribed.

Female, head dark chestnut brown. Area between eye and base of mandibles, and postclypeus, yellow-brown, the latter dusky in the middle. Labrum, antennae, ventral parts of thorax, legs, and abdominal sternites, yellow to yellow-brown, abdominal sternites sometimes darker laterally. Pronotum and abdominal tergites, dark chestnut brown. Meso- and metanota and pleura, brown.

Posterior margin of head almost semicircular ; fontanelle oval, often with small narrow extension anteriorly, smaller than ocelli, more or less depressed, centred slightly in front of a line joining posterior margins of eyes (the only *E. African* *Amitermes* in which this is the case) ; eyes about as long as postclypeus ; ocelli large, broad oval, separated from eyes by about their own width ; postclypeus

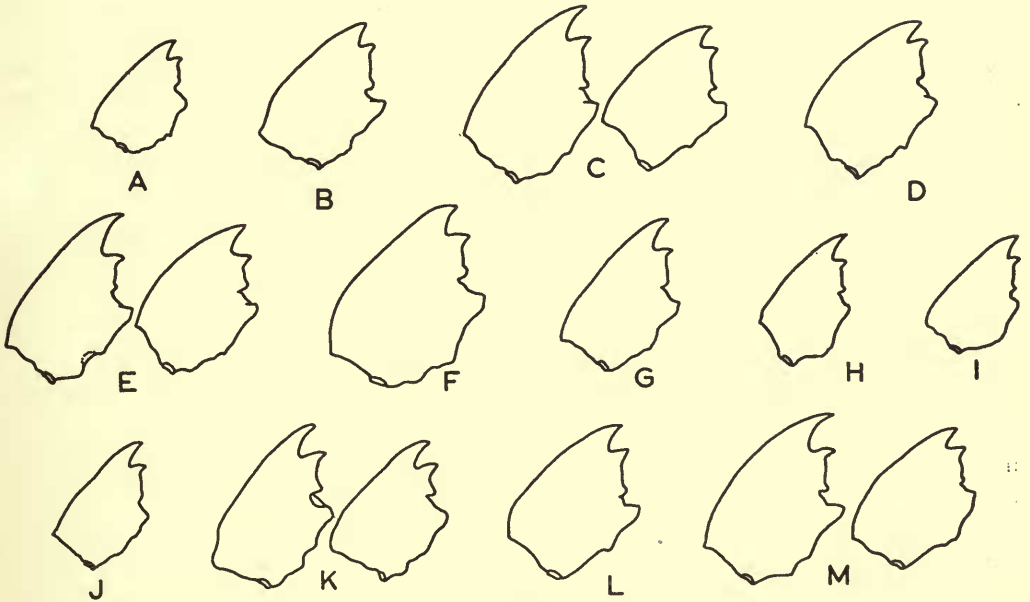


FIG. 4. Left mandibles of worker castes.

- A. *Amitermes acinacifer* sp. nov.; B. *Amitermes braunsi* Fuller; C. *Amitermes evuncifer* Silvestri; D. *Amitermes hastatus* (Haviland); E. *Amitermes importunus* sp. nov.; F. *Amitermes lonnbergianus* (Sjöstedt); G. *Amitermes messinae* Fuller; H. *Amitermes sciangallorum* Ghidini; I. *Amitermes somaliensis* Sjöstedt; J. *Amitermes spinifer* Silvestri; K. *Amitermes stephensoni* Harris; L. *Amitermes truncatidens* sp. nov.; M. *Amitermes unidentatus* (Wasmann).

about half as long as broad, inflated, anterior margin straight, posterior margin evenly convex; antennae 15 segmented, IV and V subequal, III half these, II slightly longer than III, shorter than IV and V; left mandible, third marginal tooth usually protrudes beyond the short cutting edge connecting it with first marginal apical tooth stout, slightly shorter or as long as first marginal.

Pronotum distinctly narrower than head across eyes, anterior margin straight, sides broadly rounded, converging to distinctly emarginate posterior.

Entire insect sparsely pubescent, intersegmental membrane of abdomen with shorter finer setae than rest of body.

Male, indistinguishable from female, apart from sexual characteristics.

	Range in mm.	Mean
Head width across eyes	1.18-1.25	1.21
Greatest diameter of eye	0.27-0.31	0.29
Ocellus	0.08-0.10 × 0.12-0.14	0.09 × 0.13
Ocellus to eye	0.08-0.11	0.09
Width of pronotum	0.93-1.02	0.98
Length of pronotum	0.61-0.64	0.62
Length of hind tibia	1.29-1.36	1.33

Described from five pairs of dealated males and females from the type locality.

MORPHOTYPE LOCALITY. KENYA: Lolokwi, north of the Uaso Nyero, 7.i.53 (W. A. Sands, Coll. No. 326). Morphotypes in British Museum (Natural History).

SOLDIER. Tooth of mandibles varies from vestigial to well developed, broadly triangular. Range of measurements much greater than previously recorded.

	Range in mm.	Mean
Length of head capsule	1.43-1.75	1.61
Greatest width of head	1.29-1.52	1.40
Width of head at base of mandibles	0.97-1.09	1.03
Depth of head	1.07-1.29	1.17
Length of left mandible	0.76-0.86	0.82
Length of pronotum	0.40-0.47	0.43
Width of pronotum	0.78-0.86	0.84
Length of hind tibia	1.18-1.39	1.30

The variation in the mandibular tooth of the soldier shows a tendency to form a cline, with the tooth most strongly developed in specimens from Marsabit in Northern Kenya. The cotype of *A. lacertosus* Ghidini corresponds exactly to the most northerly specimens of *A. lönnbergianus* (Sjöstedt) and the former species is therefore reduced to a synonym.

OTHER RECORDS. Only a representative selection is given.

KENYA: Turkana Province, Garamaroi, 1952; Northern Frontier Province, Marsabit, Isiolo, and near Garba Tula, 1953; Meru, Tana River (Grand Falls), 1953; Mtito Andei, 1952 (W. A. Sands); 40 m. from Hola on the Garissa Road, 1954 (W. Wilkinson); Malindi, Voi, 1950 (W. V. Harris).

TANGANYIKA: Mwakijembe, Same, 1952 (P. B. Kemp); Sanya Plain, 1951 (R. C. H. Sweeney).

SOMALILAND : Burao, 1952 (E. J. Van Ingen).

This species is common in dead wood and dung in these localities, but has only once been recorded from a low mound. The nest is probably usually subterranean. There are a few records from mounds of *Cubitermes* spp., but this is a rare occurrence.

Amitermes messinae Fuller

(Text-figs. 2, E, F ; 3E ; 4G ; 5F ; 6, F, M)

Hamitermes messinae Fuller, 1922, *S. Afr. J. nat. Hist.* 3 (2) : 70-131, South Africa : Northern Transvaal, Messina.

Eutermes hastatus (Haviland) ; Sjöstedt, 1910, *Wiss. Ergeb. Schwed. Zool. Expedn., Kilimandjaro-Meru*, 1905-1906, 3 (15) : 1-28, Tanganyika : Kibonoto.

Amitermes sp. I., Kemp, 1955, *Bull. ent. Res.* 38 : 125.

Amitermes harleyi Harris, 1957, *B.M.N.H. Rept. Exp. S.W. Arabia*, 1421-433.

IMAGO. *Female*, head and pronotum dark sepia brown, postclypeus only slightly paler, brown. Antennae pale brown, apices of segments yellowish-white. Labrum pale yellow. Thoracic sclerites (apart from pronotum), abdominal tergites and lateral parts of sternites sepia brown. Legs, femora pale, tibiae dusky at base, paler distally, tarsi pale, yellowish-white. Middle of abdominal sternites yellowish-white. Wings translucent pale brown, venation entirely sepia brown.

Posterior margin of head almost semicircular ; fontanelle pale, broad oval, approximately equal in size to ocelli, slightly depressed, with narrow parallel-sided pale extension from anterior end, almost as long as rest of fontanelle ; eyes as long as or slightly shorter than postclypeus ; ocelli of medium size, separated from eyes by slightly more than own width ; postclypeus inflated, length about half breadth, posterior margin convex, arched in middle, straighter laterally, anterior margin straight ; antennae 15 segmented, III half as long as II, IV and V subequal, shorter than II, longer than III.

Pronotum distinctly narrower than head across eyes, anterior margin produced into a short but distinct emarginate median lobe, sides broadly rounded, converging to slightly emarginate posterior.

Entire insect finely pubescent, with pale setae, those of intersegmental membrane of abdomen shorter, curved, yellow.

Male, closely similar to female except that wings often slightly smaller.

	Range in mm.	Mean
Head width across eyes	0.87-1.02	0.99
Greatest diameter of eye	0.21-0.26	0.24
Ocellus	0.06-0.07 x 0.09-0.10	0.07 x 0.09
Ocellus to eye	0.07-0.08	0.07
Width of pronotum	0.72-0.86	0.80
Length of pronotum	0.47-0.57	0.53
Length of hind tibia	0.89-1.04	1.01
Length of fore wing	8.80-10.50	9.60

SOLDIER. Head capsule mainly pale yellow, sometimes darker, yellow- to red-

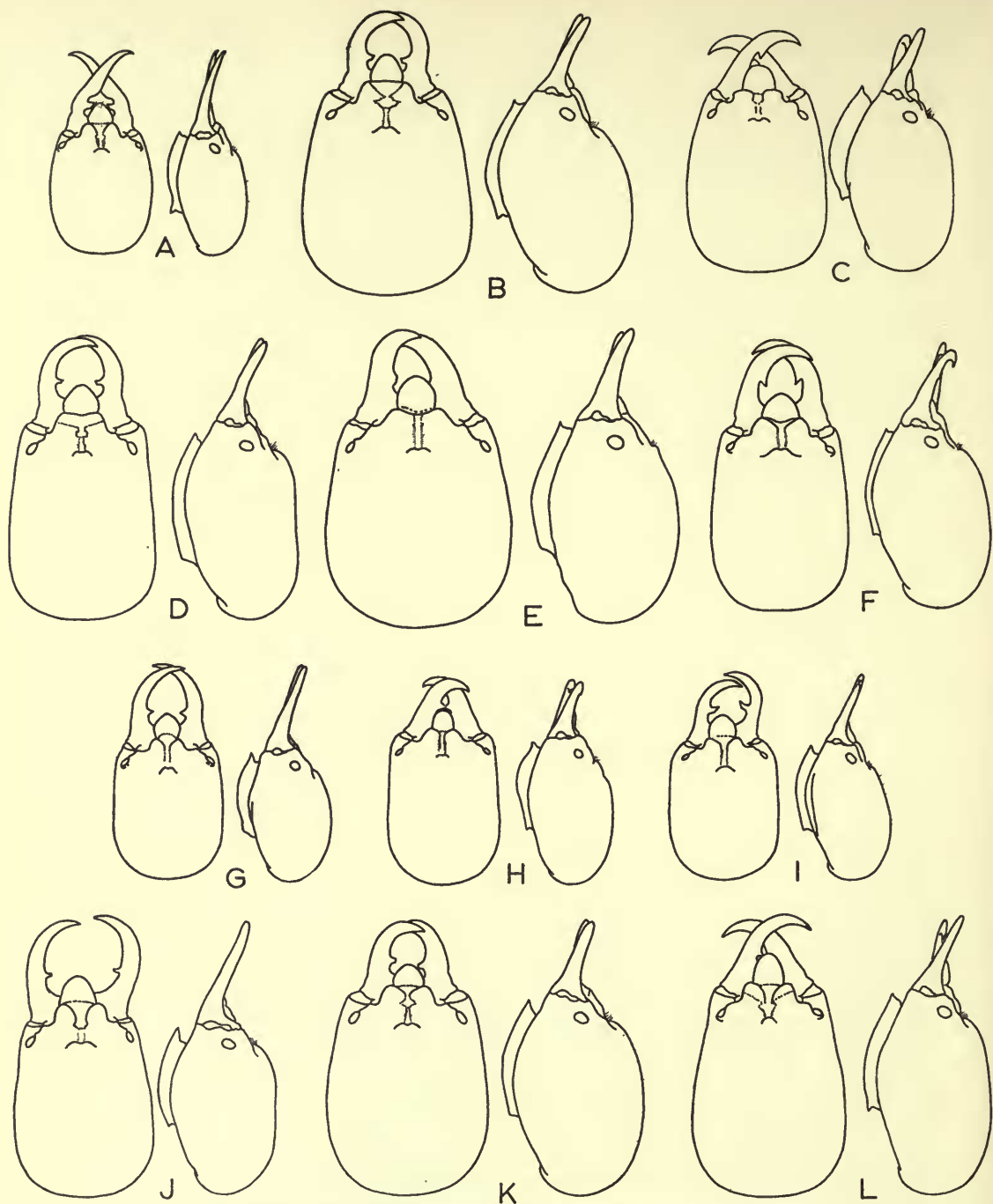


FIG. 5. Plan and side views of heads of soldier castes.

- A. *Amitermes acinacifer* sp. nov.; B. *Amitermes evuncifer* Silvestri; C. *Amitermes hastatus* (Haviland); D. *Amitermes importunus* sp. nov.; E. *Amitermes lönnbergianus* (Sjöstedt); F. *Amitermes messinae* Fuller; G. *Amitermes sciangallorum* Ghidini; H. *Amitermes somaliensis* Sjöstedt; I. *Amitermes spinifer* Silvestri; J. *Amitermes stephensoni* Harris; K. *Amitermes truncatidens* sp. nov.; L. *Amitermes unidentatus* (Wasmann).

brown at sides and in front of fontanelle; mandibles yellow-brown to deep red-brown. Antennae, pronotum and legs, yellow, pronotum sometimes slightly darker in front; rest of body yellowish-white except where gut contents show through abdomen.

Head capsule in plan view distinctly longer than broad, variable in outline, approximating to rounded rectangular, posterior margin sometimes evenly rounded. In profile, continuously curved from fontanelle to occiput, curve shallower in front. Mandibles rather more than half as long as head, slender, strongly hooked; tooth approximately in middle, backwardly directed in a continuous line with the inner margin anterior to it, not prominent; inner margin a regular curve from tooth to apex inclusive. Antennae normally 14 segmented, II equals III and IV together, V longer than III and IV, shorter than II. Head capsule with scattered rather long setae, more numerous near fontanelle.

Pronotum, anterior margin entire or slightly emarginate. Legs sparsely pubescent; anterior coxae with one to four spines grouped in the middle of the front surface.

	Range in mm.	Mean
Length of head capsule	1.02-1.55	1.30
Greatest width of head	0.78-1.18	0.96
Width of head at base of mandibles	0.64-0.89	0.79
Depth of head	0.68-1.00	0.84
Length of left mandible	0.65-0.86	0.80
Length of pronotum	0.32-0.43	0.39
Width of pronotum	0.54-0.74	0.64
Length of hind tibia	0.68-0.93	0.82

WORKER. Colour yellowish-white. Third marginal tooth of left mandible not distinct from cutting edge connecting it to first marginal. Spines present on anterior coxae as in soldier. This character enables its separation from *A. unidentatus*, these two species being the commonest in many localities. Workers of *A. acinacifer*, *A. acutidens* and *A. curvatus*, which have similar coxal spines, are usually smaller.

Specimens from all parts of East Africa have been compared with the holotype male and morphotype soldier from Messina. East African alates are very slightly larger than the type, but agreement is complete in both castes in all other respects. The characteristic shape of the anterior margin of the alate pronotum has not been found in any other Ethiopian species including *A. hastatus* (Hav.) of which the soldier is somewhat similar. *A. harleyi* Harris agrees closely with specimens of *A. messinae* from Northern Kenya, and is therefore reduced to a synonym.

A representative selection is given of the records available for this species.

KENYA: Magadi, Nairobi, Voi, 1950 (W. V. Harris); Donyo Sapuk, 1952, Marsabit, Meru-Tharaka Rd., 1953 (W. A. Sands).

TANGANYIKA: Maswa, 1928 (W. V. Harris); Mwakijembe, Korogwe, Handeni, Arusha-Moshi Rd., 1951; Kihurio, Same, Mgera, 1952 (P. B. Kemp).

NYASALAND: Lower Shire, 17 miles north of Port Herald, Bilila near Fort Johnstone, Mpatamanga Gorge, 1953 (W. A. Sands and W. Wilkinson).

ZANZIBAR: Paje, Ras Fumba, 1951 (W. V. Harris).

ADEN: Western Aden Protectorate, Abyan in the Wadi Bana near Ga'ar, and Al Sura, south of Mudia, 1951 (W. V. Harris).

This species has been recorded from dead wood, dung, and on several occasions from the nests of other termites, particularly those of *Macrotermes* spp.

The type locality, Messina on the Limpopo River, must be near the southern limit of the range, since this is an East African species.

Amitermes sciangallorum Ghidini

(Text-figs. 4H; 5G; 6G)

Amitermes sciangallorum Ghidini, 1941, *Bol. Soc. ent. ital.* **73** (2): 30-34, Ethiopia: Murle:
Amitermes sp. II (part) Kemp, 1955, *Bull. ent. Res.* **38**: 125.

IMAGO. Unknown.

SOLDIER. The following additions to Ghidini's description are necessary. Head capsule in profile, continuously curved from fontanelle to occiput, top of head evenly curved. Mandibles slender, evenly and lightly curved from near base to apex; tooth distinctly behind middle, prominent, erect, equilaterally triangular; inner margin a regular curve from base of tooth to apex, or slightly shallower near base of tooth. Antennae 14 segmented, III and IV subequal, shorter than V; II as long as III and IV combined. Head capsule with scattered setae.

Pronotum with anterior border entire or slightly emarginate, anterior lobe large. Anterior coxae with 3-5 spines grouped on front surface. Rest of legs with setae and tibial spurs.

	Range in mm.	Mean
Length of head capsule	1.04-1.07	1.05
Greatest width of head	0.84-0.88	0.86
Width of head at base of mandibles	0.68-0.72	0.70
Depth of head	0.68-0.72	0.72
Length of left mandible	0.72-0.78	0.75
Length of pronotum	0.36	
Width of pronotum	0.54	
Length of hind tibia	0.70-0.75	0.73

WORKER. Colour yellowish-white. Postclypeus slightly more swollen than in *A. spinifer* Silvestri. Third marginal tooth of left mandible usually protrudes slightly beyond cutting edge connecting it with first marginal.

The soldier resembles *A. spinifer* in size and colour, but the mandibles are distinct. The head profile is similar to *A. acinacifer*, to which it is probably related.

TANGANYIKA: Kumburu, Mwakijembe, Ngomeni, 1951; Kihurio, Mnazi, 1952 (P. B. Kemp).

Three of the four records are from dead logs and stumps, the fourth from a mound with *Trinervitermes* sp. and two other species of *Amitermes*.

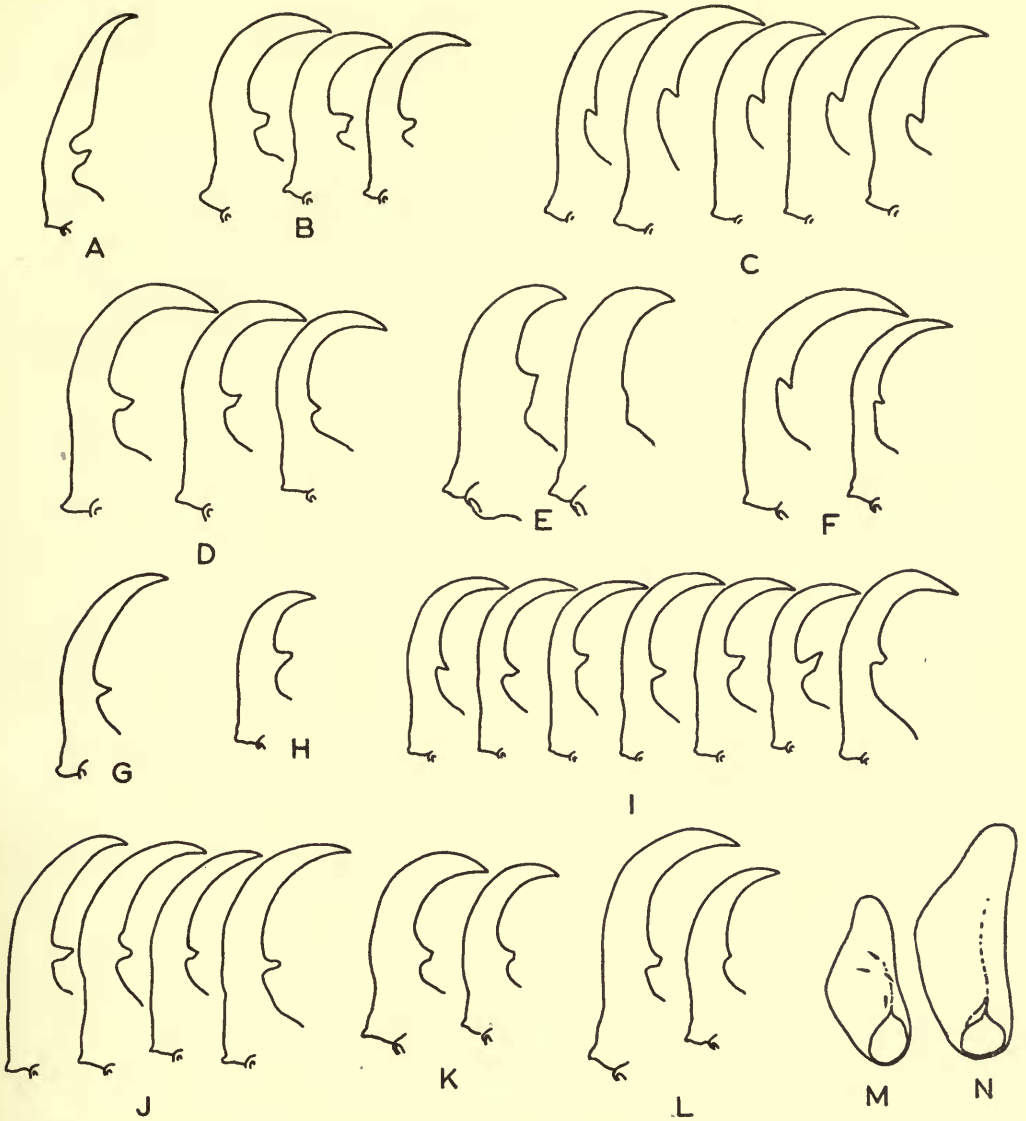


FIG. 6. A-L, left mandibles of soldier castes showing range of variation; M, N, anterior coxae of soldier caste showing presence and absence of coxal spines.

- A. *Amitermes acinacifer* sp. nov.; B. *Amitermes evuncifer* Silvestri; C. *Amitermes hastatus* (Haviland); D. *Amitermes importunus* sp. nov.; E. *Amitermes lönnbergianus* (Sjöstedt); F, M. *Amitermes messinae* Fuller; G. *Amitermes sciangallorum* Ghidini; H. *Amitermes somaliensis* Sjöstedt; I. *Amitermes spinifer* Silvestri; J. *Amitermes stephensoni* Harris; K. *Amitermes truncatidens* sp. nov.; L, N. *Amitermes unidentatus* (Wasmann).

Amitermes somaliensis Sjöstedt

(Text-figs. 2G; 3F; 4I; 5H; 6H)

Amitermes somaliensis Sjöstedt, 1927, *Rev. zool. afric.* **15**: 97-104, Somaliland: Villagio Duca Abruzzi.

IMAGO. Previously undescribed.

Female, head and pronotum sepia-brown, postclypeus paler, yellow-brown. Antennae pale yellow-brown, labrum pale yellow. Thoracic sclerites, pronotum, excepted, legs, and small patches at lateral margins of abdominal sternites, pale yellow-brown, rest of abdominal sternites yellowish-white. Abdominal tergites pale sepia brown. Wings translucent pale brown, subcosta and radius sector largely pale yellow, radius sector sepia brown at base with narrow sepia brown streak running parallel to and touching posterior edge, throughout its length. Rest of venation brown.

Posterior margin of head almost semicircular; fontanelle pale, broad oval to almost circular, slightly smaller than ocelli, weakly depressed; eyes as long as postclypeus; ocelli small, separated from eyes by own width or slightly less; postclypeus weakly inflated, length rather more than half breadth, posterior margin evenly convex, anterior margin straight; left mandible with third marginal tooth distinctly protruding beyond sinuate cutting edge joining it to first marginal, apical equal in length to first marginal; antennae 15 segmented, II equal to III and IV together, V longer than these but shorter than II.

Pronotum narrower than head across eyes, anterior margin straight, sides broadly rounded, converging to slightly emarginate posterior.

Pubescence of sclerites pale, fine, rather sparse and scattered, that of intersegmental membrane of abdomen shorter, curved, evenly distributed, yellowish.

Male, as female, except wings slightly shorter.

	Range in mm.	Mean
Head width across eyes	0.86-0.93	0.89
Greatest diameter of eye	0.21-0.23	0.22
Ocellus	0.07-0.08 × 0.08-0.10	0.07 × 0.09
Ocellus to eye	0.04-0.08	0.05
Width of pronotum	0.68-0.75	0.73
Length of pronotum	0.43-0.50	0.46
Length of hind tibia	0.82-0.89	0.85
Length of fore wing	8.20-8.90	8.60

Described from two collections containing many alates from Marsabit, Northern Kenya.

MORPHOTYPE LOCALITY. KENYA: Marsabit, Northern Frontier Province, 10.iii.53 (W. A. Sands, Coll. No. 486). Morphotypes in British Museum (Natural History).

SOLDIER. A greater range of size variation than that recorded by Sjöstedt is now known. Anterior coxae with 2-3 small spines.

	Range in mm.	Mean
Length of head capsule	1.06-1.18	1.16
Greatest width of head	0.78-0.86	0.81
Width of head at base of mandibles	0.66-0.72	0.70
Depth of head	0.68-0.72	0.71
Length of left mandible	0.57-0.65	0.58
Length of pronotum	0.32	
Width of pronotum	0.52-0.54	0.53
Length of hind tibia	0.68-0.70	0.68

All the specimens correspond exactly with Sjöstedt's description of this species.

KENYA: Northern Frontier Province, Marsabit, 1953 (W. A. Sands).

Five samples were collected in this area, from the surface layers of mounds of *Macrotermes bellicosus* (Smeathman). This habitat agrees with the original record, and confirms the identity of the specimens. One soldier apparently of this species is recorded from southern Nyasaland, but it cannot be definitely identified in view of the discontinuity of the distribution involved.

Amitermes spinifer Silvestri

(Text-figs. 2H; 3G; 4J; 5I; 6I)

Hamitermes spinifer Silvestri, 1914, *Boll. Lab. zool. Portici* 9: 3-146, Senegal: Dakar, Thiès.

Amitermes sp. II (part) Kemp, 1955, *Bull. ent. Res.* 38: 125.

IMAGO. Previously undescribed.

Female, head and pronotum dark sepia brown, postclypeus paler, yellow-brown. Antennae brown, apices of segments yellowish-white. Labrum yellow. Meso- and metanota yellow, other thoracic sclerites yellow-brown. Abdominal tergites and lateral parts of sternites, sepia brown. Legs, femora yellow, tibiae yellow-brown at base, paler distally, tarsi yellow. Middle parts of abdominal sternites yellowish-white. Wings translucent, brown, venation sepia brown.

Posterior margin of head almost semicircular; fontanelle smaller than ocelli, very slightly depressed, with very small pale extension from anterior and between two short diverging shallow grooves; eyes distinctly longer than postclypeus; ocelli of medium size, separated from eyes by about half own width; postclypeus inflated, length about half breadth or slightly less, posterior margin convex, arched in middle, straighter laterally; anterior margin straight or slightly concave; antennae 15 segmented, III half as long as II, IV and V subequal, shorter than II, longer than III.

Pronotum distinctly narrower than head across eyes, anterior margin straight or slightly sinuate, sides broadly rounded, converging to very weakly emarginate posterior.

Pubescence of sclerites pale, that of intersegmental membrane of abdomen curved, yellowish.

Male, as female, except posterior abdominal sternites uniformly brown, intersegmental pubescence of abdomen sparser, wings very slightly shorter.

	Range in mm.	Mean
Head width across eyes	0.89-0.91	0.90
Greatest diameter of eye	0.22-0.23	0.23
Ocellus	0.07-0.09 × 0.10-0.13	0.08 × 0.11
Ocellus to eye	0.02-0.04	0.03
Width of pronotum	0.68-0.77	0.72
Length of pronotum	0.43-0.47	0.44
Length of hind tibia	0.82-0.93	0.89
Length of fore wing	7.7-8.1	8.0

Described from two series of alates and a separate queen from different localities in Nigeria.

MORPHOTYPE LOCALITY. NIGERIA: Northern Region, 30 miles from Lokoja on the Okene road, in mound of *Cubitermes* sp., 8.iii.58 (W. A. Sands, Coll. No. 2092). Morphotypes in British Museum (Natural History).

SOLDIER. The following data and measurements must be added to Silvestri's description. Tooth of mandible highly variable, from backwardly directed in a continuous line with the inner margin anterior to it, to prominent, erect, directed slightly forwards, obliquely truncated and sharply pointed; inner margin a regular curve from base of tooth to apex.

	Range in mm.	Mean
Length of head capsule	0.89-1.18	1.03
Greatest width of head	0.74-0.91	0.83
Width of head at base of mandibles	0.58-0.68	0.64
Depth of head	0.61-0.72	0.65
Length of left mandible	0.61-0.72	0.65
Length of pronotum	0.29-0.32	0.30
Width of pronotum	0.47-0.54	0.50
Length of hind tibia	0.68-0.75	0.71

WORKER. Postclypeus flatter than in *A. acinacifer*. Third marginal tooth of left mandible not distinct from cutting edge connecting it with first marginal.

The soldier mandibles of *A. spinifer* are the most variable of any African species, the range having been established from a large amount of material from East and West Africa. The type specimens have been examined and compared with similar series from Nigeria. They fall near to but not at the extreme of reduction of the mandibular tooth.

OTHER RECORDS

SIERRA LEONE: Freetown, 1958 (W. Wilkinson).

NIGERIA: 12 m. from Tula on Numan Road, Yola, Zinna, 22 m. from Beli on Jalingo Road, Samaru, 1957; and 20 m. from Yandev on Makurdi Road, 1958 (W. A. Sands).

UGANDA: Moroto, and 40 m. from Moroto on Soroti Road, 1952 (W. A. Sands).

KENYA: Kinango, Kwale, 1952 (P. B. Kemp), between Tharka and Meru, 1953 (W. A. Sands).

TANGANYIKA: Kumburu-Ngomoni, 1951 (P. B. Kemp).

This small species has been collected from the mounds of other genera, mainly those of *Cubitermes*, but has rarely been found in dead wood.

Its distribution in Kenya and Tanganyika appears to be restricted to small areas of suitable savannah on the lower slopes of mountains or hills.

Amitermes stephensoni Harris

(Text-figs. 2I; 3H; 4K; 5J; 6J)

Amitermes stephensoni Harris, 1957, *B.M.N.H. Rept. Exp. S.W. Arabia*: 421-433, Eastern Aden Protectorate, Saiun in the Hadhramaut.

IMAGO. Previously undescribed.

Female, head and pronotum dark sepia brown, postclypeus only slightly paler, yellow-brown. Antennae pale brown, apices of segments yellowish-white. Labrum yellow-brown. Thoracic sclerites apart from pronotum, abdominal tergites and lateral parts of sternites sepia brown. Legs, femora yellow-brown, tibiae brown, paler at tips, tarsi, including claws, yellow-brown. Middle parts of abdominal sternites pale yellow to yellow-brown, posterior segments sometimes uniformly brown. Wings, translucent, brown, venation mainly sepia brown, subcosta with paler streak along posterior edge, more noticeable towards wing tip.

Posterior margin of head broadly rounded, not almost semicircular as in the other species, usually slightly sinuate immediately behind eyes; fontanelle pale, broad oval, half as large as ocelli or less, with small parallel-sided pale extension from anterior end; eyes as long as postclypeus; ocelli of medium size, separated from eyes by slightly less than own width; postclypeus inflated, length about half width or slightly more, posterior margin evenly convex, anterior margin straight; left mandible with third marginal tooth not distinct from cutting edge connecting it to first marginal; antennae 15 segmented, II equal to III and IV together, IV and V subequal, slightly longer than III.

Pronotum narrower than head across eyes, anterior margin straight, sides broadly rounded, converging to emarginate posterior.

Pubescence of sclerites fine, pale, rather sparse and scattered, that of intersegmental membrane of abdomen very short, fine and pale.

Male, as female, except posterior abdominal sternites uniformly brown, wings slightly shorter.

	Range in mm.	Mean
Head width across eyes	1.00-1.11	1.06
Greatest diameter of eye	0.24-0.29	0.27
Ocellus	0.08-0.09 × 0.11-0.13	0.08 × 0.12
Ocellus to eye	0.04-0.08	0.07
Width of pronotum	0.82-0.97	0.91
Length of pronotum	0.54-0.64	0.60
Length of hind tibia	0.97-1.13	1.05
Length of fore wing	9.80-10.0	9.40

Described from numerous specimens from Nigeria.

MORPHOTYPE LOCALITY. NIGERIA: Northern Region, 43 m. from Maiduguri on the Potiskum road, 31.v.57 (W. A. Sands Coll. No. S.1615). Morphotypes in British Museum (Natural History).

SOLDIER. The new material of this species has necessitated some additions to Harris's description.

Head capsule mainly pale yellow sometimes yellow-brown to brown at sides and in front of fontanelle.

Head profile with upper surface straight or slightly curved between swelling above fontanelle and sharper curve to occiput. Mandibles over half as long as head, relative width in front of and behind tooth variable; tooth at or slightly behind middle, prominent and erect, obliquely truncated, triangular or rounded; inner margin usually a continuous curve from base of tooth to apex, sometimes slightly sinuate near tooth.

Anterior coxae with at least one spine on front surface, often two or three.

	Range in mm.	Mean
Length of head capsule	1.11-1.39	1.28
Greatest width of head	0.96-1.17	1.11
Width of head at base of mandibles	0.72-0.84	0.78
Depth of head	0.80-0.91	0.87
Length of left mandible	0.72-0.95	0.86
Length of pronotum	0.32-0.46	0.40
Width of pronotum	0.57-0.77	0.68
Length of hind tibia	0.72-1.09	0.89

WORKER. Left mandible similar to that of imago, except that the cutting edge between first and third marginals is sometimes slightly more concave. Spines are present on anterior coxae.

These characters distinguish it from *A. evuncifer* which often occurs in similar situations.

Though the type locality for this species is Aden, this must be the extreme eastward end of its range, since it occurs in the Guinean and Sudan vegetation zones in Nigeria.

OTHER RECORDS. Only a representative selection is given.

NIGERIA: Western Region, between Shagamu and Ijebu-Ode, 1957; Northern Region, Kaura Namoda, 1956; 10 m. North of Bida, Tula, Yola, 19 m. South of Beli, 22 m. from Lokoja on Kabba Road, 32 m. from Damaturu on Potiskum Road, 1957 and 1958 (W. A. Sands).

This species has only rarely been taken from dead wood; in most cases it has been collected from the mounds built by other species or genera, mainly those of *Macrotermes* and *Trinervitermes* spp., but not uncommonly in *Odontotermes* and *Cubitermes* mounds.

Amitermes truncatidens sp. nov.

(Text-figs. 2J ; 3I ; 4L ; 5K ; 6K)

Amitermes limpopoensis Fuller ; Harris, 1958, *Explor. Parc. nat. Upemba Miss. de Witte*, 52 (1) : 1-26.

IMAGO. *Female*, head and pronotum mainly sepia brown. Postclypeus and a somewhat diffuse streak from posterior margin of eye to back of head, paler, yellow-brown. Labrum, antennae, ventral parts of thorax, femora, tarsi and median parts of abdominal sternites, pale yellow. Lateral parts of thorax, tibiae and lateral parts of abdominal sternites, pale yellow-brown. Meso- and metanota and abdominal tergites, brown.

Posterior margin of head almost semicircular, fontanelle oval, with small narrow pale extension anteriorly, slightly depressed ; frons with two small pale grooves diverging from near ventral end of fontanelle extension ; eyes about as long as postclypeus ; ocelli of medium size, separated from eyes by slightly less than own width ; postclypeus about half as long as broad, inflated, anterior margin straight, posterior margin evenly convex ; antennae 15 segmented, IV and V subequal, III shorter, II longer than these ; left mandible, third marginal tooth protrudes beyond cutting edge connecting it with first marginal.

Pronotum narrower than head across eyes, anterior margin straight, sides slightly sinuate, converging to distinctly emarginate posterior.

Entire insect finely pubescent, setae of intersegmental membrane shorter than others.

Male, as female.

	Range in mm.	Mean
Head width across eyes	1.07	—
Greatest diameter of eye	0.29-0.30	0.29
Ocellus	0.08-0.09 × 0.12-0.13	0.09 × 0.13
Ocellus to eye	0.05-0.07	0.07
Width of pronotum	0.89	—
Length of pronotum	0.50	—
Length of hind tibia	1.07-1.13	1.09
Length of fore wing	9.50-10.0	9.67

SOLDIER. Head capsule pale yellow ; mandibles yellow-brown at base, chestnut-brown at tips ; antennae pale yellow, rest of body yellowish-white except where gut contents show through abdomen.

Head in plan view distinctly longer than broad, sides convex, converging slightly anteriorly ; posterior margin evenly rounded or nearly so. In profile, continuously curved from fontanelle to occiput, curve shallower in front. Mandibles slightly less than half as long as head, rather stout, strongly hooked ; tooth slightly behind middle, prominent, erect, transversely to obliquely truncated ; inner margin a regular curve from base of tooth to apex. Antennae 14-15 segmented, proportions of basal segments variable, II longer than III, IV or V. Head capsule almost devoid of setae except surrounding fontanelle.

Pronotum, anterior margin entire or slightly emarginate. Legs almost without

setae or spines except at distal ends of tibiae and tarsi; anterior coxae without spines or setae.

	Range in mm.	Mean
Length of head capsule	1.33-1.61	1.50
Greatest width of head	1.07-1.30	1.20
Width of head at base of mandibles	0.78-0.90	0.83
Depth of head	0.91-1.12	1.03
Length of left mandible	0.64-0.74	0.70
Length of pronotum	0.32-0.40	0.36
Width of pronotum	0.62-0.72	0.67
Length of hind tibia	0.89-1.04	0.97

WORKER. Indistinguishable from *A. evuncifer* Silv.

A. truncatidens closely resembles *A. evuncifer* in all castes, and may ultimately prove to be a southern race of that species. In the present absence of intermediate forms it can be distinguished in the alate caste by the broader oval fontanelle, and the shallow diverging pale grooves on the frons. The soldier head capsule is more inflated above the fontanelle, and the mandibular tooth is usually more transversely truncated.

Described from 22 alates and numerous soldiers from the type colony, and many soldiers from other localities.

TYPE LOCALITY. TANGANYIKA: Nachingwea, 22.x.50 (W. V. Harris, Coll. No. 756).

Holotype female, allotype male, morphotype soldier and paratypes in British Museum (Natural History).

OTHER RECORDS. A representative selection is given.

NYASALAND: Near Mpatamanga Gorge, Kasungu, 60 m. from Mzimba on Rumpi Road, Songwe River, 1953 (W. A. Sands and W. Wilkinson).

NORTHERN RHODESIA: Choma: Siamambo, near Kitwe, Lake Bangweulu, Lusaka, 1957 (W. G. H. Coaton), Barotseland, 1956 (E. N. Cooling).

SOUTHERN RHODESIA: Salisbury, 1911 (G. A. K. Marshall).

ANGOLA: Munhango, 1928 (M. Burr).

This species is common in dead wood, and in carton nests of its own construction, but has also been recorded from the mounds of various *Macrotermitinae*.

Amitermes unidentatus (Wasmann)

(Text-figs. 2K; 3, J, K; 4M; 5L; 6, L, N)

Termes unidentatus Wasmann, 1897, *Abh. Senckenb. Ges.* 21: 137-182, Bawi Island Zanzibar.

Hamitermes ("Termes") *unidentatus* (Wasmann); Wasmann, 1910, *Voeltzkow, Reise Ostafrika*, 3: 117-127.

Eutermes meruensis Sjöstedt, 1911, *Ent. Tidskr.* 32: 173-188.

Hamitermes (*Hamitermes*) *meruensis* (Sjöstedt); Holmgren, 1912, *K. svenska Vetensk. Akad. Handl.* 48 (4): 1-166.

Hamitermes elongatus Silvestri, 1914, *Boll. Lab. zool. Portici*, 9: 3-146.

Hamitermes limpopoensis Fuller, 1922, *S. Afr. J. nat. Hist.* 3 (2): 70-131.

Amitermes unidentatus (Wasmann); Sjöstedt, 1926, *K. svenska Vetensk. Akad. Handl.* (3) 3 (1): 1-419, and also *Rev. zool. africaine*, 14 (1): 141-164.

Amitermes (Amitermes) elongatus Silvestri: Emerson, 1928, *Bull. Amer. Mus. nat. Hist.* 57: 401-574.

Amitermes macrocephalus Ghidini, 1941, *Bol. Soc. ent. ital.* 73: 30-34.

IMAGO. Some additions to Sjöstedt's description are necessary.

Fontanelle, larger than ocelli, variable, flat to deeply depressed, sometimes very large, more than half diameter of eye; postclypeus inflated, posterior margin convex, slightly sinuate laterally, anterior margin straight; left mandible with third marginal tooth distinct, distance between apical and first marginal usually less than that between first and third marginals; antennae 14-15 segmented.

	Range in mm.	Mean
Head width across eyes	1.04-1.22	1.12
Greatest diameter of eye	0.26-0.32	0.30
Ocellus	0.07-0.09 × 0.09-0.13	0.08 × 0.10
Ocellus to eye	0.05-0.09	0.07
Width of pronotum	0.86-1.11	0.98
Length of pronotum	0.56-0.75	0.65
Length of hind tibia	1.04-1.33	1.20
Length of fore wing	8.40-12.0	10.1

SOLDIER. Highly variable in shape and proportions of head capsule and mandibles. In plan view, head usually approximates to rectangular; in profile, continuously curved from fontanelle to occiput, curve shallower in front. Tooth of soldier mandible varies from prominent to vestigial. Anterior coxal spines absent in both soldier and worker.

	Range in mm.	Mean
Length of head capsule	1.13-1.79	1.55
Greatest width of head	0.96-1.39	1.17
Width of head at base of mandibles	0.72-0.93	0.84
Depth of head	0.75-1.11	0.96
Length of left mandible	0.66-0.90	0.81
Length of pronotum	0.32-0.47	0.39
Width of pronotum	0.57-0.84	0.73
Length of hind tibia	0.87-1.14	1.03

The cotypes of *A. elongatus* Silvestri, *A. limpopoensis* Fuller, and *A. macrocephalus* Ghidini have been examined, together with topotypes of *A. meruensis* (Sjöstedt) and a large quantity of material of *A. unidentatus* (Wasm.) including topotypes. They form a continuous range of variation, and therefore *A. elongatus* Silv., *A. limpopoensis* Fuller, *A. meruensis* (Sjöst.) and *A. macrocephalus* Ghidini must be reduced to synonyms of *A. unidentatus* (Wasm.). Sjöstedt's record of *A. unidentatus* from the Gold Coast (*Ark. Zool.* 18 (12): 1-5) would appear to be anomalous in view of the known distribution of the species. The specimens have not been examined and cannot therefore be assigned to the correct species, but it has been disregarded in preparing the map of distribution of the genus.

This species is distinguished from *A. truncatidens* sp. nov., *A. evuncifer* Silvestri,

and *A. importunus* sp. nov. by the less prominent tooth of the soldier mandible; from *A. messinae* Fuller and *A. spinifer* Silvestri by the absence of spines from the anterior coxae, in both soldier and worker castes.

A representative selection from the large number of records of this species is given.

UGANDA: Toror Hills, Karamoja District, 1952 (W. A. Sands).

KENYA: Malindi, Samburu, Shimba Hills, 1950, Voi, 1952 (W. V. Harris); Ol Donyo Sapuk, Ngong Hills, 1952, Marsabit, Lolokwi, Uaso Nyeru, Isiolo, Tharaka-Meru, 1953 (W. A. Sands).

TANGANYIKA: Kirando, 1933; Uvinza, 1934; Mafia Is., 1937; Ngare Nanyuki (topotypes of *A. meruensis* (Sjöst.)), Bomangombe, 1950 (W. V. Harris). Shinyanga, Tabora, 1948; Itigi, Singida, 1949; Babati, Tanga, 1950; Amani, 1951; Sama, Handeni, Mwakijembe, 1952 (P. B. Kemp).

ZANZIBAR: Bawi Is. (topotypes of *A. unidentatus* (Wasm.)), Mangapwani, 1951 (W. V. Harris).

RUANDA URUNDI: Nshiri-Kibungu, 1952 (W. V. Harris).

NYASALAND: Localities from Salima southwards to Chiromo, 1953 (W. A. Sands and W. Wilkinson).

Many of these records are from dead branches, tree stumps, and similar habitats. It also frequently constructs low hard mounds of a mixture of soil and carton. On a few occasions, it has been found in mounds built by other termites such as *Cubitermes* and *Pseudacanthotermes* spp., but this is uncommon. It is the commonest and most widespread species occurring in East Africa.

ACKNOWLEDGMENTS

I wish to thank Dr. W. G. H. Coaton for sending type material from the Fuller collection from South Africa, and for his generous loan of material from his own collection from Northern Rhodesia. My thanks are also due to the Trustees of the British Museum (Natural History) for permission to examine types and other material in the termite collection.

SUMMARY

Examination of a large amount of material collected by members of the Colonial Termite Research Unit and other workers has led to the conclusion that the genus *Amitermes* is represented by 13 species in the entire Ethiopian zoogeographical region, and of these, three are new to science. In four species the imago is described for the first time. Three species are removed from the genus, having been found to belong to the subfamily Termitinae.

The reduction of 17 species to synonyms is based on a study of the wide range of variation, which is described and discussed. Keys are provided to the known soldiers and alates.

The distribution of the genus is characterized by the occurrence of comparable groups of a few species of similar ecological significance in the different vegetation zones of the region.